

IN THE SPECIFICATION

The paragraph and following table beginning on page 7 at line 11, shall be replaced with the following:

There are two parameters that can be used to characterize the optical properties of soft tissue – its *effective* scattering coefficient μ_s' , and its linear absorption coefficient μ_a . The effective attenuation coefficient μ_{eff} , is related to these two parameters according to:

$\mu_{eff} \approx \sqrt{3\mu_a(\mu_a + \mu_s')}$, under the assumption that $\mu_s' \gg \mu_a$, which is generally true in the near infrared. The optical properties of some rat tissues, measured at 1064 nm, are tabulated in Table 1. These data provide a target range of values that we would like to mimic in our phantom construction.

Rat Tissue	μ_a (cm ⁻¹)	μ_s' (cm ⁻¹)	μ_{eff} (cm ⁻¹)
Skin	.23	9.1	2.5
Liver	1.3	8.25	6.1

The paragraph beginning on page 7, at line 21, shall be replaced with the following.

The scattering properties of Intralipid 10% at 1064 nm have been documented. We assume that the optical scattering of Liposyn 20% is twice that of Intralipid 10%, since its lipid constituents are identical to those of Intralipid 10%, but at twice the concentration. Consequently, we will assume the effective scattering coefficient of Liposyn 20% is related to its % concentration according to:

$$\mu_s'(cm^{-1}) \approx 1.31\% \text{ (Liposyn 20\%)}. \quad (1)$$

The paragraph beginning on page 8, at line 1, shall be replaced with the following.

The absorption coefficient of India Ink has been measured as:

$$\mu_a' (cm^{-1}) \approx 27\% \text{ (Indian Ink).} \quad (2)$$

The paragraph beginning on page 8, at line 18, shall be replaced with the following:

For the images discussed below, a phantom was constructed using 4% Agar, India Ink and Liposyn-20%. A 6-mm diameter cylinder of 4% Agar doped with 0.01% India Ink produced an absorption coefficient of 0.42 cm^{-1} at 1064 nm. Optical scattering was negligible. This absorbing phantom was placed within the 20-mm diameter phantom holder, with the rest of the phantom holder filled with 4% Agar doped with 8% Liposyn-20%, which produced an absorption coefficient of $\mu_a \sim 0.15 \text{ cm}^{-1}$ (due almost entirely to water), and a reduced scattering coefficient of $\mu_s' \sim 10 \text{ cm}^{-1}$. The Agar + Liposyn combination also produced a phantom with reasonable acoustic scattering properties for ultrasound image formation.

The paragraph beginning on page 9, at line 21, shall be replaced with the following:

The spatial resolution of this imaging system may be estimated by deconvolving the effect of the finite size of the point source from the Gaussian fit to its image (Fig. 5B).

Accordingly, the FWHM of the PSF of the system was estimated as: $\text{PSF}_{\text{FWHM}} = \sqrt{180^2 - 100^2}$
= 150 microns. This spatial resolution corresponds to $\lambda/2$ of the central frequency (5 MHz) of the L538 array, consistent with theory.